Nathan Louie

University of Texas, Austin | PMA 11.108 | nathanlouie.png@gmail.com | nalouie.github.io

RESEARCH INTEREST

My interests are broadly in topology, particularly in low-dimensional and algebraic.

EDUCATION

University of Texas Austin — Austin, TX
Doctor of Philosophy in Mathematics — *Aug. 2024 - Present*

University of Washington: 3.95 — Seattle, WA
Bachelor of Science in Mathematics with Distinction: 3.96
  Honor Thesis: "Chern-Gauss-Bonnet Theorem"
Bachelor of Science in Computer Science: 3.91 — *Sept. 2021 - June 2024*

EXPERIENCE

WXML Participant — Sept. 2023 - March 2024
University of Washington — *Seattle, WA*
- Participating in the Washington eXperiment Mathematics Lab. Our project is on the formalization of mathematics using Lean, guided by Professor Jarod Alper. We worked on formalizing results from quadratic form theory and transfer systems.

REU Participant — June 2023 - Aug. 2023
Northwestern University — *Evanston, IL*
- Participated in an eight-week REU on dynamical systems under Professor Aaron Brown funded by NSF RTG. We were able to construct an original smooth Anosov actions on the 3-torus and other nilmanifolds by surface groups, and further explored properties surrounding it. See report.

Content Developer — Aug. 2021 - Sept. 2021
Red Lens Games & Mojang Studios — *Seattle, WA*
- Designed and implemented modifications packs using JSON with assistance from professionals in the company. Led and directed a team of high-schoolers to brainstorm, implement, and present their own custom packages.

ADDITIONAL INFORMATION

Conferences/Summer Schools Attended: SU UnKnot Conference *2024*, UGA Summer School on Topology *2024*, NU Summer School on Dynamical Systems *2023*

Talks Attended: UT Sophex Seminars *2024*, UT Topology Seminars *2024*, UT Junior Topology Seminars *2024*, Skein Lasagna Module Seminar *2024*, UW-PIMS Colloquium Series *2022-2024*, and K-OS Knot Online Seminar *2024*.

Outreach: UT Austin Directed Reading Group Mentor *2024*, Meet a Mathematicians Panelist *2024*, UW ath Hour Olympiad Judge *2023*, UW Undergraduate Reading Group Mentor *2023-2024*, and UW Undergraduate Journal Peer Reviewer *2022-2024*.

Awards: Dean's Strategic Fellow. *2024*, Wisniewski Endowed Sch. *2024*, BAVA Sch. *2021-2024*, WSOS Sch. *2021-2024*, and HS Valedictorian.

Programming Skills: Java, Python, C, C++, SQL, LaTeX, Mathematica, Sage, GAP, and Lean.

Languages: English *native*, Cantonese *native*, Japanese *intermediate*.

Reading Groups Attended: Low-Dimensional Topology Bootcamp *2024*, Topological Quantum Field Theory *2024*, Topos Theory *2024*, Grad. Topology Prep *2022*, Grad. Algebra Prep *2021*, Grad. Analysis Prep *2021*